

What is claimed is

[1] A liquid crystal display device comprising;

a liquid crystal display cell comprising

an array substrate having a pixel electrode for each color of red, green and blue arranged on the display screen in a matrix form,

an opposing substrate having an opposing electrode arranged in such a manner as to face the pixel electrodes of the array substrate,

an alignment layer formed on the pixel electrode and the opposing electrode,

a liquid crystal layer arranged in a bend alignment interposed between the array substrate and the opposing substrate, and

a filter comprising a red filter layer, a green filter layer and a blue filter layer provided on one side of the substrate, the red filter layer being arranged corresponding to the red pixel electrode, the green filter layer being arranged corresponding to the green pixel electrode, and the blue filter layer being arranged corresponding to the blue pixel electrode;

a phase difference plate arranged on at least one of main surfaces of the liquid crystal display cell;

a pair of polarization plates arranged so as to interpose the liquid crystal display cell and the phase difference plate in the crossed-Nicol configuration; and

a voltage supplying means to supply a voltage in a predetermined range so as to obtain a gradation of the display screen between the opposing electrode and the red, green, blue pixel electrodes, wherein the voltage supplying means supplies a voltage, becoming the highest at each color in black display of the display screen and making the highest voltage of the pixel electrode of one color be different from the highest voltage of the electrode of the other color.

[2] The liquid crystal display device as described in Claim 1, wherein the voltage supplying means supplies a maximum voltage at the blue pixel electrode different from a maximum voltage at the red or green pixel electrode.

[3] The liquid crystal display device as described in Claim 1, wherein the maximum voltages for the red, green and blue pixel electrodes are different from each other in order that the summed retardation value of the liquid crystal layer and the phase difference plate of the liquid crystal display cell becomes zero at the position of the red, green and blue pixel electrodes when the display screen is in the black display.

[4] The liquid crystal display device as described in Claim 3, wherein the summed retardation value of the blue pixel electrode becomes zero at a wavelength shorter than the light wavelength of 450 nm.

[5] The liquid crystal display device as described in Claim 4, wherein the maximum voltage supplied to the blue pixel electrode is higher than a maximum voltage making the summed retardation value be equal to zero.

[6] The liquid crystal display device as described in Claim 4 or Claim 5 comprising;

a liquid crystal display cell comprising

an array substrate having pixel electrodes for each color of red, green and blue arranged in a matrix form on a display screen,

an opposing substrate having an opposing electrode arranged in such a manner as to face the pixel electrodes of the array substrate,

an alignment layer formed on both the pixel electrodes and the opposing electrodes,

a liquid crystal layer interposed between the array substrate and the opposing substrate, and arranged in a bend alignment, and

a filter comprising a red filter layer, a green filter layer and a blue filter layer provided on one side of the substrate, the red filter layer being arranged corresponding to the red pixel electrode, the green filter layer being arranged corresponding to the green pixel electrode, and the blue filter layer being arranged corresponding to the blue pixel electrode;

a phase difference plate arranged on at least one of main surfaces of the liquid crystal display cell;

a pair of polarization plates arranged so as to interpose the liquid crystal display cell and the phase difference plate in the crossed-Nicol configuration;

a means for supplying maximum voltage between the opposing electrode and the red, green, blue pixel electrodes, the maximum voltage differing from each other for the red, green, blue pixel electrodes; and

a backlight source arranged on one side of the polarization plate, having light emission peaks in light wavelength regions appropriate to the red, green, and blue filter layers respectively, and the blue wavelength region having light emission peaks at a longer wavelength side and a shorter wavelength side with reference to 450 nm.

[7] The liquid crystal display device as described in Claim 4 to Claim 6, wherein the maximum voltage of the blue pixel electrode is set to a voltage making the v' value of the $u'v'$ chromaticity diagram become the maximum.

[8] The liquid crystal display device as described in Claim 4 to Claim 6, wherein the maximum voltage of the blue pixel electrode is set to a voltage making the Z value of the XYZ stimulus value become the minimum.